Kansas Department of Health and Environment
Bureau of Waste Management
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Solvent-Contaminated Rags

Technical Guidance Document HW-1995-G2

Many businesses use rags (cloth towels, paper wipes, wipers, and other absorbent materials) to clean up in areas where solvents, paints, inks, or petroleum products are used. These rags may be used in conjunction with solvents as part of the cleaning process. This technical guidance document (TGD) describes the circumstances under which solvent-contaminated rags that will be laundered for reuse are exempt from the hazardous waste regulations. This TGD also describes how to determine which hazardous waste codes apply to solvent-contaminated rags that will be disposed of rather than reused.

Solvent-contaminated rags will be referred to simply as "rags" in the rest of this document.

Laundering Rags for Reuse

Federal regulations do not provide clear criteria for determining when reusable rags are considered a waste and thus become subject to the hazardous waste regulations. To assist the regulated community in Kansas, the Kansas Department of Health and Environment (KDHE) has developed the following set of best-management standards for rags that will be laundered for reuse. Rags that are managed according to these standards are not considered a waste and are exempt from state and federal hazardous waste regulations.

Management of rags before laundering

1. All free liquids must be removed by wringing, pressing, or other effective means (but not air drying). Recovered liquids must be reused or managed as a hazardous waste.
2. Each container used to accumulate rags must be in good condition, closed, non-leaking, fire-resistant, and kept away from sources of ignition. The container should prevent the release of contaminants to the air through evaporation.
3. Each accumulation container must be marked with the words "*Solvent-Contaminated Rags"* or similar language.
4. The rags must not be stored with other rags or wastes with which they are incompatible.
5. If the rags are transported off-site for laundering, the container must meet all U.S. Department of Transportation (DOT) requirements. For questions about DOT requirements, contact the Federal Motor Carrier Safety Administration at 785-271-1260.

Laundering of rags on-site or off-site

1. If a facility launders its own rags on-site, the owner/operator must get written approval from the city to discharge the wastewater into the sanitary sewer.
2. If the rags are sent to a commercial laundry:
   - The wastewater discharge must be permitted by the local authorities under the Clean Water Act; and
   - The facility must notify the laundry that the rags are contaminated with solvent.

If a facility chooses to launder and reuse rags according to the preceding standards, the rags are not subject to generator, transporter, or treatment, storage, and disposal (TSD) facility requirements and are not "counted" as a hazardous waste when determining the facility's generator status. If a facility fails to comply with the preceding standards, disposes of the rags, or treats the rags prior to disposal, the rags may be considered a solid waste and therefore subject to a waste determination and applicable hazardous waste regulations.

Disposing of Rags

Rags that will not be laundered and reused must be disposed of. When the decision is made to dispose of rags, the rags become a solid waste

and the generator must determine if the rags are a characteristic hazardous waste and/or a listed hazardous waste. This process is often called the hazardous waste determination, and the following sections break this process down into manageable steps.

Characteristic of Ignitability

The first step is to determine if the rags are an ignitable hazardous waste. Check the Material Safety Data Sheet (MSDS) for the solvent and find the flashpoint. Next determine if there are free liquids on the rags. If the rags are saturated (dripping), they contain free liquids, and if the flashpoint of the solvent being used is less than 140 degrees Fahrenheit, the rags are an ignitable hazardous waste. The waste code for an ignitable hazardous waste is D001. The generator must continue with the determination process because all appropriate waste codes must be assigned to the rags.

Other Characteristics

The rags may exhibit other characteristics of hazardous waste. An evaluation must be made using the generator's knowledge of the process that generated the rags, and possibly using analytical testing, to determine whether the rags exhibit any other characteristics of hazardous waste. The rags may be corrosive (D002), reactive (D003), and/or toxic (D004 – D043).

The most common characteristic KDHE sees for rags (other than D001) is toxicity for a metal. Each generator must evaluate the process in which the rags were used to determine if there is any potential that the rags have become contaminated with metals. Very few solvents contain metals, but a look at the MSDS for the solvent will confirm this. Be aware that metals or other contaminants could end up on the rags from materials other than solvents (for example, some paints contain metals). The metals of concern are listed in the following table, along with their regulatory limits in milligrams per liter (mg/L) and their waste codes.

If the generator thinks that the rags might be contaminated with any of these metals, they should submit a representative sample of the rags to a KDHE certified laboratory to be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) test for these metals. If the analytical results show that the rags contain less than the regulatory limit for all metals, the rags are not hazardous for metals. If the rags contain any metal at or above the regulatory limit, they are hazardous for that metal. The waste code for each metal that is at or above the regulatory limit applies to the rags.

Metal	Regulatory limit	Waste Code
Arsenic	5.0 mg/L	D004
Barium	100.0 mg/L	D005
Cadmium	1.0 mg/L	D006
Chromium	5.0 mg/L	D007
Lead	5.0 mg/L	D008
Mercury	0.2 mg/L	D009
Selenium	1.0 mg/L	D010
Silver	5.0 mg/L	D011

There are many other possible characteristics and the generator must conduct a thorough evaluation of their rags. The generator must also continue through the determination process in the following sections.

Listed Hazardous Waste

The generator must also determine if their rags are a listed hazardous waste. This must be done using the generators knowledge; it cannot be done with analytical testing.

The Environmental Protection Agency (EPA) has several listings for hazardous waste. The listings that most commonly apply to rags are F001, F002, F003, F004, and F005. These listings can be found in 40 CFR 261.31. If the solvent meets the F001, F002, F004, or F005 listing, the rags contaminated with that solvent are a hazardous waste and must be managed as a hazardous waste. The generator should use the MSDS for each solvent to determine if the solvent meets any of the definitions in the listings. More than one listing may apply to the rags.

F003-listed solvents are a little different from other F-listed solvents. F003 solvents are only listed for ignitability, so rags contaminated only with F003 solvents may not be a hazardous waste. If the rags do not contain free liquids (are not saturated or dripping) and do not exhibit the characteristic of ignitability for a solid, as defined in 40 CFR 261.21(a)(2), the rags will not be F003-listed hazardous waste. However, the generator needs to make certain that the rags are not contaminated with any other substance that might make them hazardous waste, including but not limited to, other listed solvents or metals.

It is important to note that there are alternative solvents that may be less toxic and therefore not a listed hazardous waste. Switching to less toxic solvents may result in fewer regulatory requirements and less risk to employees.

Additional information may be found in the following TGDs:

- HW-2011-G1, Hazardous Waste Determinations and Documentation; and
- HW-2011-G2, Characteristic and Listed Hazardous Wastes.

Rags Contaminated with Used Oil

The federal used oil regulations (40 CFR 279.19(c), adopted in K.A.R. 28-31-279) state that rags contaminated with used oil that have been wrung out "to the extent possible such that no visible signs of free flowing oil remain" are not subject to the Part 279 used oil regulations. Instead, wrung-out rags that are to be disposed of are solid waste and a hazardous waste determination must be made so they can be managed in the proper manner.

Common Violations Associated with Rags

Several options for properly managing rags have been described in this document. The following describes some common problems seen by KDHE and the violation that may be cited:

- Disposal of solvents (free liquids) by pouring them into containers of used rags, or mixing any other hazardous wastes with the used rags, can be considered unlawful disposal of hazardous waste. The rags lose any exemptions or management flexibility discussed elsewhere in this document.
- Air drying of solvent-contaminated rags to allow volatile constituents to evaporate (and remove free liquids) is considered unlawful treatment of a hazardous waste.
- Disposal of F005-listed rags into the trash is considered unlawful disposal.
- Disposal of F003-listed rags without an adequate waste determination is considered a failure to determine if a waste is hazardous waste and, if the subsequent waste determination shows that the rags are a hazardous waste, can also be considered unlawful disposal of a hazardous waste.

These are general guidelines only. For information regarding any specific or different management options, you may contact the Bureau of Waste Management at (785) 296-1600 or the address at the top of this document, or visit the Bureau's website at http://www.kdheks.gov/waste/.